

AMENDMENTS TO THE CLAIMS

Claim 1 (currently amended): An active pixel sensor device, comprising:

an array of pixels, arranged in logical units, wherein each pixel comprises a photosensor element, an in-pixel buffer element, and an in-pixel selector element; and

a plurality of analog-to-digital converters, formed on the same substrate as said pixel sensor array, and each associated with N logical units of the pixel sensor array, each of said N logical units having including a plurality of pixels, each of said plurality of analog-to-digital converters comprising:

a plurality of storage elements; and

an analog-to-digital (ADC) portion, said ADC portion for receiving an analog signal from one of said pixel sensors of an associated logical unit when a selector element associated with said one pixel is enabled, and for converting said analog signal to a converted digital value, said ADC portion storing said converted value into one of said plurality of storage elements; and

a readout controller for controlling readout of information from the photosensor elements by controlling each of said analog-to-digital converters to:

convert first information from a first line of the array and store said first information in one of said plurality of storage elements;

after said convert and store of said first information, convert second information from a second line of the array and store said second information in another one of said plurality of storage elements; and

read out said first and second information from said plurality of storage elements in a desired order;

wherein N is at least two.

Claim 2 (original): A sensor as in claim 1, wherein said logical units are lines of the array including either columns of the array or rows of the array.

Claim 3 (original): A device as in claim 2, wherein said analog-to-digital converters are associated with at least two adjacent lines of the array.

Claim 4 (cancelled):

Claim 5 (previously presented): A method of operating a pixel sensor array, comprising:

obtaining a pixel sensor array of photosensitive elements, each having a photosensitive element in a pixel, a buffer in said pixel associated with said photosensitive element, and a selector transistor in said pixel which is enabled to allow a signal from said pixel to pass, and disabled to block the signal from passing;

connecting a plurality of said outputs of said selector transistors to one another, to form a plurality of logical units, each logical unit formed by a plurality of said output

transistors which are connected to one another;

receiving, in each of a plurality of A/D converter units each comprising a plurality of first storage unit, a plurality of second storage units, and an analog-to-digital conversion (ADC) portion, a respective plurality of signals from a respective plurality of first logical units, and A/D converting said respective plurality of signals into a respective plurality of converted digital values and storing said respective plurality of converted digital values information in a respective one of said plurality of first storage units;

receiving, in said plurality of A/D converter units, a respective of signals from a respective plurality of second logical units, adjacent to said first logical units, and A/D converting said respective plurality of signals into a respective plurality of converted digital values and storing said respective plurality of converted digital values in a respective one of said plurality of second storage units; and

reading out said information from said A/D conversion unit in a different order than an order in which the information was converted.

Claim 6 (original): A method as in claim 5, wherein said different order is in a serial order.

Claim 7 (previously presented): A method as in claim 5, wherein said units are linear units which are one of rows and columns, and said different order include a first different order which skips lines between conversions, and a second different order which is a complete order.

Claim 8 (previously presented): The device of claim 1, wherein each pixel is a CMOS pixel.